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# Gas Chromatographic Retention Time of Formaldehyde

SIR: In studying the carbonyl components in smoke from cigar tobacco, it was found convenient to separate and fractionate these components through the medium of their 2,4-dinitrophenylhydrazones (DNPH's). For identification purposes, the flash exchange gas chromatographic method of Ralls (2) was used. A series of known DNPH's was run to establish retention times. Among these samples was formaldehyde-DNPH. A formaldehyde peak could not be seen when a short (5-foot Craig polyester-succinate) column was used, because of its proximity to the large carbon dioxide peak. (The carbon dioxide arises from decarboxylation of the  $\alpha$ -ketoglutaric acid exchanger.) However, when a longer column (10-foot Carbowax 20M) was used, a formaldehyde peak was easily detected.

Until this time, apparently no one

had been able to report a retention time for formaldehyde (1). Presumably this was due to the difficulty of maintaining the monomer in liquid form for injection into a gas column by syringe. Therefore, the method of Ralls is offered as a very simple and convenient way to obtain this retention time.

Although our own experience has been limited, it is felt that any gas chromatography column capable of resolving carbonyls could be used, provided it is long enough. In obtaining a retention time for formaldehyde of 2.30 minutes, our operating conditions were:

Column. Carbowax 20M on Chromosorb (35/80 mesh), 10 feet, in stainless steel (1/4-inch).

Detector. 4-filament thermal conductivity cell.

Detector current. 300 ma.

Temperature.  $90^{\circ} \pm 0.3^{\circ} \text{C}$ .

Helium flow. 32 ml. per minute.  
Recorder. 2.5 mv., 3-second pen speed, 30 inches per hour.

## LITERATURE CITED

- (1) Gager, F. L., Jr., Philip Morris, Inc., Richmond, Va., private communication.
- (2) Ralls, J. W., *ANAL. CHEM.* **32**, 332 (1960).

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